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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,001	10/30/2003	Hidenori Usuda	9319S-000575	7423
27572	7590	09/20/2005	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303			FIDLER, SHELBY LEE	
			ART UNIT	PAPER NUMBER
			2861	

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/698,001	USUDA ET AL.	
	Examiner	Art Unit	
	Shelby Fidler	2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☒ Claim(s) 14,15,29,30 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5-6, 8, 16-18, 20-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Kubo (6257688).

With regards to claim 1, Kubo teaches a droplet discharging apparatus (“ink jet recording apparatus,” col. 3, line 9) comprising: means for discharging a discharge liquid in the form of droplets through an aperture (col. 3, lines 14-15) by mechanically deforming a piezoelectric element (col. 4, lines 44-45) by a normal drive signal, and wherein the droplets are discharged from the aperture by a cooling drive signal, which is different from the normal drive signal (col. 3, lines 19-22).

With regards to claims 2 and 17, Kubo’s invention prevents the occurrence of ink spray (col. 7, lines 27-28), which results from the continuous application of pulses to the electrodes (col. 7, lines 25-26). Therefore, Kubo’s invention must undergo the continuous application of pulses to the electrode, resulting in a plurality of droplet discharges by the cooling drive signal so as to cool the discharge liquid (col. 7, lines 15-20) to a specific temperature (fig. 4).

With regards to claims 3 and 18, Kubo teaches the cooling drive signal is set to a low frequency level that does not cause the piezoelectric element to heat the discharge liquid (col. 6, lines 36-40).

With regards to claims 5 and 20, Kubo teaches discharging the droplets from the aperture by the cooling drive signal if the temperature of the discharge liquid detected by a temperature detecting means exceeds a predetermined threshold (col. 7, lines 15-16).

With regards to claims 6 and 21, discharge by the cooling signal has already been carried out by parent claim.

With regards to claims 8 and 23, Kubo teaches the discharge liquid is a printing ink (col. 3, line 9).

With regards to claim 16, Kubo teaches a droplet discharging method wherein the discharge liquid is cooled by a cooling discharge, which is different from a normal discharge (col. 3, lines 31-33).

With regards to claim 22, cooling discharge and normal discharge are mutually exclusive and cannot co-exist.

Claim Rejections - 35 USC § 103

Claims 4 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubo in view of Tajika (5861895).

With regards to claims 4 and 19, Kubo does not teach a cooling drive signal with a waveform shape as to cause droplets of maximum weight. Tajika discloses setting a cooling waveform so as to cause droplets of a maximum weight to be discharged (col. 11, lines 33-35). At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine Kubo's invention with Tajika's cooling drive signal to provide maximum weight

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droplets. The motivation for doing so, as taught by Tajika, is to minimize problems with temperature control (col. 11, lines 25-28).

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kubo in view of Mikami (4633269).

With regards to claim 7, Kubo does not teach a cooling discharge carried out by the cooling drive signal between normal discharges carried out by normal drive signals. Mikami discloses a cooling discharge that is carried out between normal discharges (col. 5, lines 40-46). At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine Kubo's invention with Mikami's alternating discharges. The motivation for doing so, as taught by Mikami, is to control the temperature (col. 5, lines 36-38).

Claims 9, 11-15, 24, and 26-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubo in view of Usui et. al. (2004/0070651 A1).

With regards to claims 9 and 24, Kubo does not teach forming a wiring pattern. Usui discloses discharging an electrically conductive material (paragraph 222, line 15) for forming a wiring pattern (paragraph 222, line 8). At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine Kubo's invention with Usui's electrically conductive material. The motivation for doing so, as taught by Usui, is to form metal wiring on a substrate (paragraph 222, lines 8-9).

With regards to claims 11 and 26, Kubo does not teach discharging a resin for forming a color filter. Usui discloses discharging a resin for forming a color layer of a color filter

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(paragraph 208, lines 18-20). At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine Kubo's invention with Usui's resin to form a layer of a color filter. The motivation for doing so, as taught by Usui, is to provide a manufacturing method of impacting liquid to form color filters (paragraph 2, lines 9-11).

With regards to claims 12 and 27, Kubo does not teach discharging an electro-optic material. Usui discloses discharging an electro-optic material (paragraph 224, line 4). At the time of invention, it would have been obvious to a person skilled in the art to combine Kubo's invention with Usui's electro-optic material. The motivation for doing so, as taught by Usui, is to enable the manufacture of EL display devices (paragraph 224, line 17).

With regards to claims 13 and 28, Kubo does not teach discharging a fluorescent organic compound exhibiting electroluminescence. Usui discloses discharging a fluorescent organic compound exhibiting electroluminescence (paragraph 224, lines 4-7). At the time of invention, it would have been obvious to a person of skill in the art to combine Kubo's invention with Usui's fluorescent organic compound exhibiting electroluminescence. The motivation for doing so, as taught by Usui, is to enable the manufacture of EL display devices (paragraph 224, line 17).

With regards to claims 14 and 29, Kubo does not teach a film manufacturing apparatus. Usui discloses using the droplet discharging apparatus as a film manufacturing apparatus (paragraph 224, line 6). At the time of invention, it would have been obvious to a person of ordinary skill in the art to use Kubo's invention as the film manufacturing apparatus of Usui to manufacture films.

With regards to claims 15 and 30, Kubo does not teach electronic equipment comprising a device manufactured by the film manufacturing apparatus. Usui discloses electronic equipment (LCD devices, paragraph 224, line 3) comprising a device manufactured by the film manufacturing apparatus (color filters, paragraph 224, lines 2-3). At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify Kubo's invention to produce Usui's electronic equipment. The motivation for doing so, as taught by Usui, is to enable the manufacture of EL display devices (paragraph 224, line 17).

Claims 10 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubo in view of Shinoura (6714173).

With regards to claims 10 and 25, Kubo does not teach discharging a transparent resin to form a microlens. Shinoura discloses using an ink jet printer to eject resin to form microlenses (col. 9, lines 40-43). At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine Kubo's invention with Shinoura's resin. The motivation for doing so, as taught by Shinoura, is to produce lenses (col. 9, lines 22-25).

Claim Objections

Claims 14, 15, 29, and 30 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

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With regards to claim 14, a film manufacturing apparatus is not disclosed in the parent claim.

With regards to claim 15, electronic equipment is not disclosed in the parent claim.

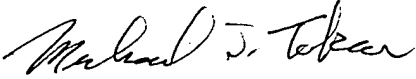
With regards to claim 29, a film manufacturing method is not disclosed in the parent claim.

With regards to claim 30, a device manufacturing method is not disclosed in the parent claim.

Conclusion

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SLF


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